CHAPTER FOUR

TRANSPORTATION ELEMENT

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4.0 TRANSPORTATION ELEMENT

The Goal of the Transportation Element is to:

> **Strive to provide a safe and convenient integrated transportation system which moves people and goods from place to place efficiently and in a cost effective manner.**

4.1 INTRODUCTION

Santa Clara is strongly affected by the movement of people and goods in the region. To facilitate this vital circulation, an extensive and effective network of highways and arterials has been constructed. Around this network, a highly mobile and automobile dependent economy has developed. Because of this dependence, the past planning assumption was that growing travel demands would be accommodated by increased road capacity. Planning for Santa Clara's transportation system has now reached a new stage.

Projections of future traffic volumes indicate that the travel demands of this region cannot be satisfied by current patterns of circulation.

The most important influence on the City's circulation system is the industrial complex that stretches along the South Bay from Palo Alto through Santa Clara and easterly towards Fremont. This complex comprises the major electronics industry concentration in the United States. This concentration of electronics and related industries has been essential to the rapid development of new technologies and employment opportunities in the area. The wealth of this County is largely based upon this concentration and interaction of industries. It is therefore necessary to maintain a circulation system capable of meeting the demands of increasing intensity.

The reader/user is advised to look at the General Plan as an integrated whole, since statutory requirements that are addressed in this element overlap and intertwine with other elements such as Land Use, Housing, Environmental Quality, and Public Facilities and Services.

4.1.1 Regional Land Use Patterns

Regional land use patterns have a strong influence on traffic flows. Jobs in Santa Clara County are generally located in the northern portion of the County, also known as the Golden Triangle area, and in the downtown areas of each city. Residential development is mostly low density uses such as single family housing, located to the northeast, and south. Commute period traffic flows between the residences and jobs, creating a pattern of heavy traffic into the employment areas in the morning and away from the centers in the evening.

The freeways and expressways in and around Santa Clara are becoming increasingly congested. Commute-hour traffic volumes exceed planned capacities at times. Local streets are less congested, and traffic projected for most of these streets can be accommodated. However, spillover traffic from overloaded regional highways can impact local streets and must be considered relevant to the City's transportation planning.

The pattern of development in the Santa Clara Valley has resulted from the mobility and flexibility that the private automobile provides. Private automobiles suit the desires and life styles of most residents of this area and will continue to be the primary means of movement for most trip purposes. The major challenge in meeting future circulation needs will be reducing the number of private automobiles used during the peak commuting hours. The most effective measures will be those that reduce the number of autos used in commuting and increase vehicle occupancy during commute hours.

4.1.2 Local Land Use Patterns

Land use within the City of Santa Clara echoes the countywide patterns. Employment is located north of the Southern Pacific Railroad tracks near US-101, and extends north to SR-237. Heavy industrial uses are typically located near the railroad tracks. Light industry, research and development, and office uses are typically located farther west and north.

Housing has been provided for the most part in the southern half of the City and in the County to the south and east of Santa Clara. The resultant traffic pattern consists of substantial traffic volumes on the north-south arterials such as San Tomas and Lawrence Expressways, northbound in the morning and southbound in the evening. Residential development in the City contains a mix of single family and multi-family. Future housing development is expected to provide more townhouses and higher density development.

Workers who are employed in Santa Clara but live outside the City limits, also contribute to heavy east-west traffic flows in the commute periods. A large volume of traffic enters the city from the Milpitas/Fremont area via SR-237 and Montague Expressway in addition to the north-south traffic noted previously.

Other land use types such as retail and commercial are primarily concentrated along El Camino Real and Stevens Creek Boulevard in the form of strip commercial with interspersed shopping centers. These retail developments are generally accompanied by heavy traffic during the midday and evening peak periods.

4.2 MAJOR ISSUES

4.2.1 Growth in Travel Demands

A major analysis of Santa Clara's street system was made in 1959-1960 as a part of the City's first General Plan. At the same time, the County was designing the expressway network. A primary design criterion of both the local and Countywide road systems was to accommodate peak hour traffic volumes generated by projected employment growth.

The 1960 General Plan projected 2,400 acres of industrial land with 30,000 employees and a density of 12.5 employees per gross acre for 1985. Industrial development since 1971 has been providing parking at a ratio consistent with employment densities of 42 employees per gross acre. In 1985, overall industrial employment densities had already reached 28 employees per gross acre.

"ABAG Projections '90" forecasts that total employment in the City of Santa Clara will reach 144,200 by 2005. This is a significant increase from 1990 figures of 119,270 jobs. These projections, along with an economic study completed for the City in 1989 as part of

the General Plan Update, indicate that office uses are becoming more common in the industrial areas. These types of developments contain substantially higher numbers of employees thus generating greater amounts of traffic.

The residential development in Santa Clara primarily occurred in the late 1950's and 1960's. Since that time, local residential development has been limited to the remaining vacant parcels and redevelopment of large or under utilized parcels. Available housing cannot meet the demand generated by the number of workers in the City.

The major area where new housing is being constructed locally is in San Jose, Fremont and Milpitas. This creates a continued separation between place of work and home, and requires workers to commute a longer distance. If industrial and office growth continues in the City while the housing supply grows more slowly, the number of workers that must commute into the Santa Clara industrial area and the industrial areas to the north will increase.

Santa Clara has developed a substantial excess of jobs over resident workers from 1.09:1 in 1965 to 2.06:1 in 1990. The attractiveness of the City's industrial area and the advantages of proximity for related industries and service businesses will continue to encourage the local growth of employment here in the near future. In the longer term, however, industrial growth will shift to the south and east to reduce the amount of travel required by employees. San Jose's General Plan recognizes this imbalance within the County and includes a policy of attracting new industry to south San Jose.

4.2.2 Automotive Usage

The growth and development in Santa Clara County during the 1980's has lead to large increases in traffic demand on the roadways.

In 1987, traffic congestion within Santa Clara County covered over 40 freeway miles resulting in nearly 15,000 lost hours daily, twice the 1980 level. A trip on route 101 that takes only 15 minutes during midday can easily take 45 minutes during peak periods.

Many people see traffic congestion as a threat to future growth, economic vitality, and quality of life for this area. The problem has many causes including rapid growth, lagging transportation improvements and land use. Contributing to the problem is the high level of solo auto use. Currently, approximately 75 percent of commuters drive alone to work, 18 percent rideshare and 3 percent use transit.

4.2.3 Environmental Consequences

(a) Air Pollution

Automobiles are major contributors to air pollution in Santa Clara Valley. The major effort to reduce the air pollution due to cars has been the addition of emission control devices on individual automobiles. Projections, however, indicate that the continued growth in the number and usage of automobiles can outweigh the ability of these control devices to reduce pollution. Alternative cleaner fuels should be promoted to reduce emissions from automobiles. More aggressive measures to reduce the number of single occupant vehicle trips will be necessary in the future to maintain an efficient transportation system within the region. For a more complete discussion of air quality, see Chapter 5 - Environmental Quality Element.

(b) Noise

Surface motor vehicle traffic is second to the airplane as the largest contributor to noise within the City of Santa Clara. Residential uses adjacent to the Lawrence and San Tomas Expressways, as well as several major thoroughfares, are impacted by traffic noise levels in excess of recommended limits. Because this noise is a result of engine noise, tire noise, and wind resistance, it is difficult to control on an individual automobile basis. The construction of a masonry wall between an expressway and homes is the most effective control at this time. Both the State and County have noise wall programs that will reduce substantially the traffic noise impact. Such walls cannot be built on local streets, however, where adjacent properties front on the street. For a more complete discussion of noise, see Chapter 5 - Environmental Quality Element.

(c) Energy Costs

The automobile is the single largest user of petroleum products in the United States. All other forms of transportation except airplanes are more energy efficient than the automobile in terms of moving a person over a specified distance. Although most automobiles can carry at least four people, a majority of the cars being operated in this country carry only the driver.

All of the costs associated with owning and operating an automobile, including purchase prices, insurance, maintenance, and fuel have increased significantly in recent years. These rising costs may eventually cause people to look more carefully at personal transportation costs and to seek alternatives to using private automobiles with only one occupant.

4.3 ROAD NETWORK

The street system serving Santa Clara is a well-planned transportation network designed to serve automobiles. The total system has three levels of jurisdiction: 1) the local streets of the City of Santa Clara which include thoroughfares, collectors and local streets, 2) the expressways of the County, and 3) the freeways of the State and Federal System. In 1989, the City maintained 242 miles of streets, 399 miles of sidewalks, 13 public alleys and two major public parking districts.

Freeways - High-speed, high-capacity, limited-access transportation facility serving regional and county-wide travel. Freeways generally are used for long trips between major land use generators. Major streets cross at a different grade level

Expressways - A divided multi-lane major arterial street for through traffic with partial control of access with grade separations at major intersections.

Thoroughfares - Streets that extend continuously between other major streets in the community. Thoroughfares are designed with 4 or more lanes to serve through traffic but also provide access to adjacent properties.

Collector Streets - Relatively-low-speed, relatively-low-volume streets that provides circulation within and between neighborhoods. Collectors usually serve short trips and are intended for collecting trips from local streets and distributing them to the arterial network.

Collectors provide access to adjacent properties.

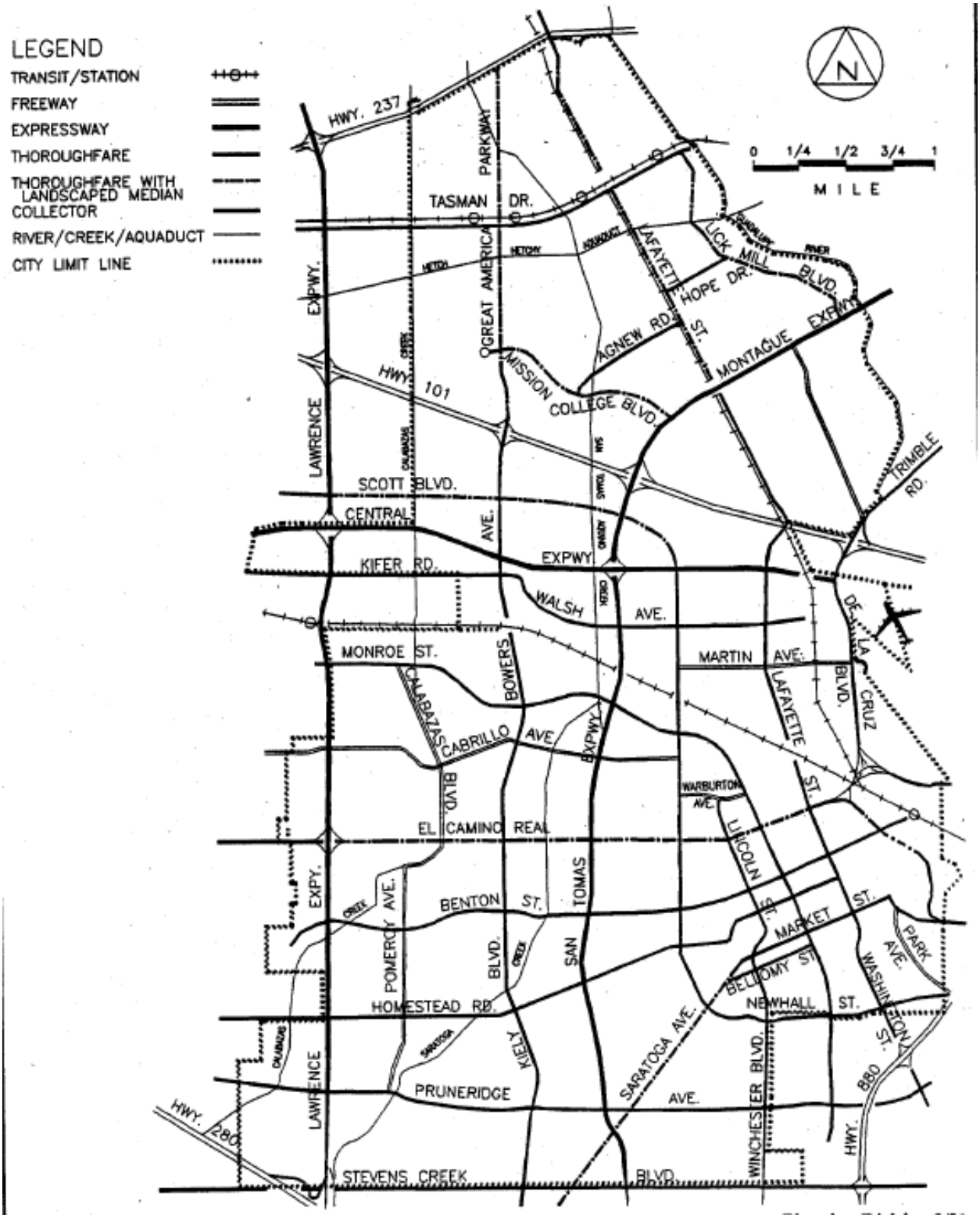
Local Streets - Local streets provide parking and access to adjacent properties. Local streets are not shown on the Circulation Diagram.

The road network is composed of four levels of streets; limited access such as freeways and expressways, thoroughfares, collectors, and local. Each level has distinct physical and operating characteristics. Limited access facilities are typically planned and constructed by either the State (freeways) or the County (expressways). Local jurisdictions are largely responsible for other streets.

Figure 4-A:
TYPE OF STREETS

Figure 4-B:

EXISTING STREET SYSTEM AND COMMUTER RAIL NETWORK



The major streets proposed to be built by and under the control of the City of Santa Clara are nearly complete. In 1989 the City Street Maintenance Division was responsible for the maintenance of 242 miles of City streets. There are some thoroughfares where sections have not been constructed to their full planned width. Some undeveloped areas also do not have local access roads yet. It is anticipated that the local City streets will be adequate to meet travel needs of City residents during the 15-year lifetime of this General Plan.

The current transportation system provides excellent mobility during much of the day with congestion during peak commuting hours on major freeways, expressways and segments of certain thoroughfares. The regional highway system will be unable, however, to accommodate future projected traffic volumes without a change in peak hour commute travel habits.

The regional highway system within the City has been largely constructed although not yet to planned standards, particularly for interchanges. The major improvements underway include Route 237 being improved to full freeway status. The 237 upgrading will necessitate the building of an interchange at Great America Parkway and a grade separation at Lafayette Street. These improvements are funded at the Federal, State and local level. Construction is currently underway with completion anticipated in 1993.

Outside of the City, there are some major links in the regional highway system that have been planned for some time but are not yet constructed. The most important of the regional links are the West Valley (Route 85) and Guadalupe Freeways. Both of these routes are north-south in orientation. Although not serving the City directly, they provide significant alternate routes for traffic that otherwise would pass through Santa Clara. Projects that are expected to have a significant impact on traffic flows through and near the City of Santa Clara are listed as follows:

- Widening of Interstate 880 between Montague Expressway and Mission Boulevard in Fremont from four to six lanes, with completion scheduled for summer 1992.

- Widening of Interstate 880 between Montague Expressway and Route 101 from four lanes to six lanes, currently unscheduled but completion is expected before 2005.

- Construction of Route 85 between Interstate 280 in Cupertino and Route 101 in south San Jose is scheduled for completion in January 1993.

- Upgrading Route 101 to an eight lane freeway between Guadalupe Parkway and Bernal Road, with an estimated completion in December 1994.

The widening and/or grade separation on these routes is expected to relieve congestion in a number of locations that are currently bottlenecks.

No longer valid is the long standing assumption that as traffic demands increase the necessary street capacities would be constructed. The rising financial costs of massive highway construction and accompanying maintenance costs have seriously depleted available construction funds. Also, social and environmental concerns have limited continuing highway construction programs.

The implication of a slow down in new road construction is that future growth of automobile traffic will have to be accommodated on the existing roadway system except for minor additions, widening, and completion of missing links. That is to say, no new roads will be added to the system. As the traffic volumes increase, the average speeds on freeways and expressways will decline and the amount of time spent commuting will increase. Motorists will attempt to use local streets to avoid congested highways, thus spreading the congestion to thoroughfares which would otherwise be adequate. The increased time and cost of commuting by car will be an incentive for alternate means of transportation.

The performance of the planned road network can be significantly improved by reducing the number of autos used in commuting and increasing the vehicle occupancy during commute hours. This strategy would eliminate the need for excessive highway expansion and maximize the existing investment in roads. Voluntary action by the traveling public, such as carpooling, use of transit for home-to-work trips, incentive programs by employers including staggered work hours and rewards for carpooling, the creation of an attractive transit service, and limited highway improvements can minimize peak hour congestion.

A major time incentive can be created through restricted High Occupancy Vehicle (HOV) lanes. Such lanes can be added as new construction adjacent to existing lanes and are a strong incentive for carpooling and bus transit. Examples of HOV lanes can be found on the Bayshore Freeway, San Tomas Expressway and Route 237. The Santa Clara County T-2000 Transportation Plan includes a network of HOV lanes on freeways and expressways, including Lawrence and Central Expressways in Santa Clara.

4.4 TRAFFIC PROJECTIONS

As part of its T-2000 Transportation Plan, the County utilized a computer traffic model. The model uses housing and employment data from the regional ABAG projections to generate trips which are assigned to the major street and transit network. The City contracted with the Santa Clara County Center for Urban Analysis to generate traffic projections for 2005 for major streets and intersections in Santa Clara utilizing the County model.

The T-2000 Transportation Plan analyzes the traffic impacts on roadway segments rather than intersections. These projections were used for this General Plan and Environmental Impact Report.

The 1989/90 daily traffic volumes were collected by City staff over a two year time frame. The volumes were then compared to a typical capacity for the roadway type, and a level of service and volume-to-capacity ratio were then calculated.

FIGURE 4-C:

LEVEL OF SERVICE STANDARD
AVERAGE DAILY TRAFFIC

Level of Service A, [V/C Ratio 0.0 - 0.60] - Indicates a relatively free flow of traffic, with little or no limitation on vehicle speed.

Level of Service B, [V/C Ratio 0.61 - 0.70] - Describes a steady flow of traffic, with only slight delays in vehicle speed during peak periods.

Level of Service C, [V/C Ratio 0.71 - 0.80] - Denotes a reasonably steady, high-volume flow of traffic, with some limitations on speed during peak hours.

Level of Service D, [V/C Ratio 0.81 - 0.90] - Denotes the level where traffic nears an unstable flow. Higher traffic volumes discourage non-vehicular activity on the street. Congestion occurs during peak periods.

Level of Service E, [V/C Ratio 0.91 - 1.00] - Describes traffic characterized by slow movement. This type of congestion is considered severe, but is not uncommon at peak traffic hours, with frequent stopping. Peak period congestion extends beyond one peak hour.

Level of Service F, [V/C Ratio 1.01 and above] - Describes unsatisfactory stop-and-go traffic characterized by "traffic jams" and stoppages of long duration. Volume is greater than theoretical capacity of the roadway.

SOURCE: Transportation and Traffic Engineering Handbook.

Level of Service (LOS) is a qualitative measure describing traffic conditions on a road or intersection. LOS uses letters from A to F to describe traffic conditions, with A representing the highest level of service. A brief definition of the range of level of service values is given on the following table.

Volume-to-Capacity Ratio (V/C Ratio) is a measure of the operating capacity of a roadway or intersection, in terms of the actual number of vehicles passing through, divided by the number of vehicles that theoretically could pass through when the roadway or intersection is operating at its designed capacity.

Street improvements are usually designed to achieve LOS D. Currently the City has a LOS D or better on a majority of its thoroughfares. Some of the major arterials and most of the expressways and freeways are operating at LOS E or F, based on a street segment analysis.

Future traffic volumes corresponding to this General Plan, forecast for the year 2005, were developed with land uses supplied by Santa Clara Planning Division. Forecast for the year 2005 volumes were developed by using the computerized traffic model maintained by the Santa Clara County Center for Urban Analysis. Traffic impacts can be assessed by comparing the 1988/89 traffic volumes to those forecasted for the year 2005.
Year 2005 traffic volumes show the following characteristics:

- The average expected growth in traffic volumes originating in Santa Clara from 1990 to 2005 is 28 percent. If there was no land use policy changes from the 1980 General Plan, there would be a 30 percent increase from traffic originating in Santa Clara.
- The collectors and minor thoroughfares generally operate at acceptable levels of service.

- Major thoroughfares, expressways and freeways generally experience congestion.

Year 2005 traffic volumes forecasted for this General Plan are generally one or two percent lower than what was forecasted for the year 2005 traffic volumes in the 1980 General Plan.

Significant increases in the use of carpools, vanpools and transit are expected to occur by 2005, which will offset some traffic growth. As light rail transit becomes available to more commuters, and the countywide expressway high occupancy vehicle lane network becomes more extensive, about 2 to 3 percent of commuters currently are expected to shift to these alternative travel modes. Where only about 3 percent of commuters use these modes of travel, the future amount is expected to be 5 or 6 percent.

Outside of the City limits, the regional highway improvements are expected to result in better overall traffic flows than existing. Projected traffic volumes on portions of I-280, SR-237 and US-101 are expected to decrease by about one percent.

The following diagrams compare the 1989/90 daily traffic volumes with those projected for 2005 under this General Plan. The LOS information is contained in the General Plan Environmental Impact Report.

Figure 4-D:

EXISTING DAILY TRAFFIC FOR 1989/1990

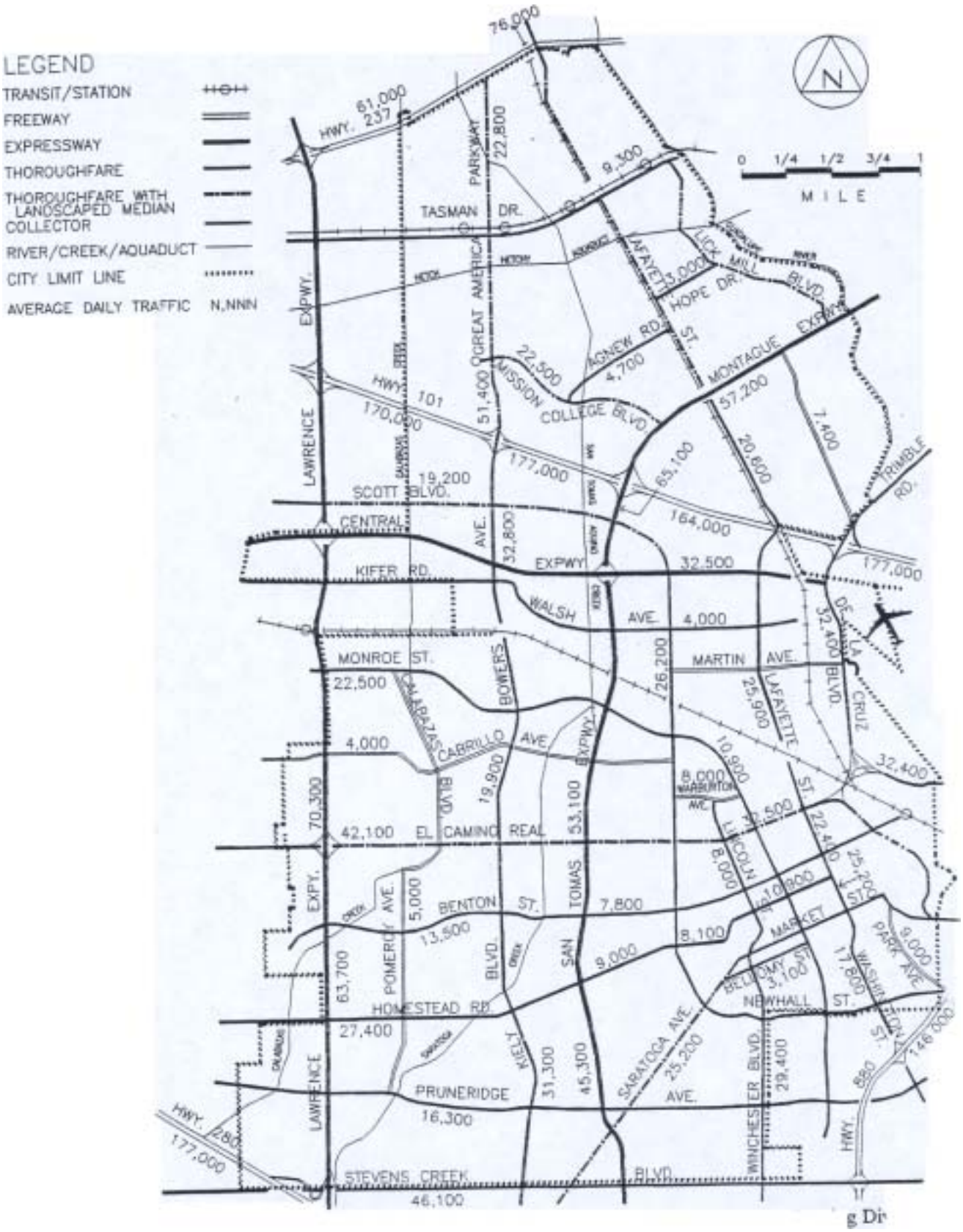
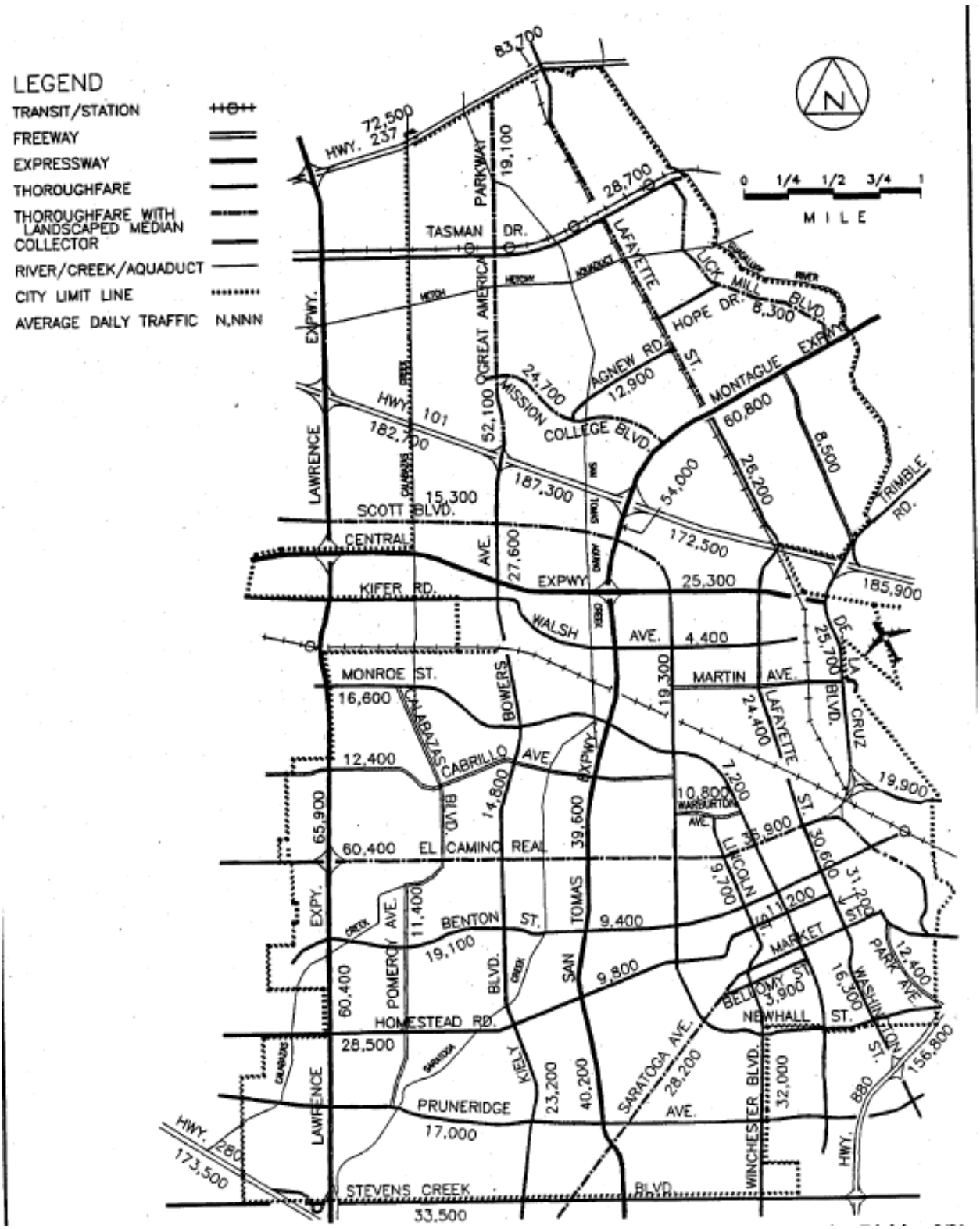


Figure 4-E:

PROJECTED DAILY TRAFFIC FOR 2005



The Santa Clara County Congestion Management Agency is developing a standardized LOS procedure based on major intersections and freeway segments. The results of this analysis will be more accurate and consistent than the current information. When complete, these new LOS will be incorporated into a subsequent General Plan update.

The land uses projected for the year 2005 in this General Plan result in an average growth in traffic volumes originating in Santa Clara of 28 percent over the 1989/90 volumes. Due to added capacity in the regional networks, the projected traffic conditions on freeways and expressways generally improve, except on the Bayshore Freeway and Montague Expressway. At the local level, the impact is varied depending on whether a street serves an area of projected growth. North-south thoroughfares used by commuters such as Great America, Winchester and Lafayette continue to be congested and the number of cars carried each day will be greater in 2005 than in 1989/1990. Other thoroughfares, the collector streets and local streets are projected to maintain acceptable levels of service despite increases in traffic volumes on these streets.

4.5 TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management (TDM) is a strategy for reducing demand on the road system by reducing the number of vehicles using the roadways and/or increasing the number of persons per vehicle. TDM attempts to reduce the number of persons who drive alone on the roadway during the commute period and to increase the number in carpools, transit or walking or biking to work.

The City of Santa Clara adopted a Transportation Demand Management Program in September, 1989. The purpose of the Transportation Demand Management Program is to: A) Reduce traffic impacts within the City of Santa Clara by reducing the number of commute-generated vehicular trips and total vehicle miles traveled. B) Reduce vehicular emissions, energy usage, and ambient noise levels by reducing the number of vehicle trips, total vehicle miles traveled and traffic congestion.

The objective of the TDM Program is to increase vehicle occupancy during commute hours and reduce the number of autos used in commuting. Major employers are the initial focus of the TDM Program. Employers are required to make annual surveys of how their employees commute to work. A menu of techniques to encourage TDM is available, including preferential carpool and vanpool parking, flex time, transit ticket sales, enhanced pedestrian access, bicycle storage and on-site eating and recreation facilities. New development is required to provide certain site design features to promote TDM.

For large developments, the City has requested that developers limit the number of parking spaces typically up to 10 percent of the requirement. Instead, the area planned for parking is "Land Banked" as landscaping or used for recreation until the actual demand for parking is demonstrated.

The City of Santa Clara has also adopted a Traffic Mitigation Program which identifies local traffic and street improvement projects within the City needed to satisfy current and projected commuter traffic demands. Funding for the Mitigation Program comes from a combination of traffic impact fees on new office and industrial development and assessments on existing development.

A 10-year capital improvement program has been developed, identifying the needed local street improvements and projected costs. This is the basis for the setting of necessary impact fees and assessment levels, in conjunction with the relative traffic generation factors.

4.6 BUS SYSTEM

The Santa Clara County Transit District has been responsible for providing bus service in the County since 1973. The bus service connects to the Bay Area Rapid Transit terminal in Fremont. With 19 express routes and 62 local routes in 1990, County Transit offers reliable, frequently scheduled, low-cost bus service from almost every residential area in Santa Clara County to every major industrial park, and downtowns. The goal for the Santa Clara County Transit District is to deliver regular bus service with stops located at quarter-mile intervals.

Since 1982, fleet and service expansion has stabilized with only small incremental expansion. Ridership has been increasing, but at a much slower rate than previously. Estimated total annual ridership in 1989 was approximately 39 million passengers.

Operating buses on other than freeways and expressways has resulted in 15 mile per hour average speeds since the buses must make stops for loading and unloading. The infrequency of bus service and the lack of direct lines from residences to employment in some areas has limited County Transit's ability to attract commuters. However, providing mobility to County residents without access to an automobile has been a major accomplishment of the Transit District.

In order to attract significant numbers of commuters in the future, trip times on transit must compare favorably with those of a private automobile. Exclusive lanes for buses and car pools should be promoted as a means of creating more rapid transit.

County Transit bus routes are always subject to change, therefore a map of the bus system within city limits is not provided with this General Plan. However, updated maps of bus routes are available from County Transit, at Santa Clara City Hall and local libraries.

4.6.1 Express Bus Service

To better serve the critical commute market, the local bus system is supplemented by a network of express bus lines. County Transit's Express Bus service is typically aimed primarily at commuters who reside eight or more miles from work. The existing transit network connects major industrial areas to residential areas via key freeways and expressways. A higher fare is charged for this premium service.

In order to make express routes a truly "express" service, a number of physical improvements are also planned for the County's freeways and expressways. These improvements are aimed at giving the express buses, together with car pools and van pools, preferential treatment over general traffic. Measures such as bus bypass ramps on metered freeways and reserved lanes for high-occupancy vehicles (H.O.V.'s) are being implemented as an integral part of the express bus service.

A high percentage of the projected express bus riders will make use of "park-and-ride"

facilities, as they are developed, which will include vehicle parking, sheltered waiting areas, bicycle lockers and service information. Wherever possible, park-and-ride facilities will be located on existing vacant public property and in conjunction with uses such as shopping centers and churches.

Industry cooperation is also being encouraged to assist express bus service. Industry-supplied shuttle vans or buses will be needed to complete the commute trip for many riders, and firms will need to increasingly be encouraged to cooperate through employee information, staggering of work hours and other inducements.

4.6.2 Shuttle Service

The City could supplement County Transit and promote a privately operated service in the Bayshore North area. Major developments recently approved in that area have been conditioned with shuttle requirements when ridership justifies the service. Such a shuttle would link major employers, hotels, Great America Theme Park, Convention Center and the Light Rail Line with frequent connections. Although starting as a van or bus service, the shuttle could be upgraded if demand warranted to an automated fixed guideway operation. It could also provide service to the Lawrence and Santa Clara/Airport CalTrain Stations.

4.6.3 Elderly and Handicapped Service

Santa Clara County has been a leader in providing transportation services for the elderly and handicapped. In 1976, the Board approved a full accessibility policy which called for a transition to a fully passenger accessible bus fleet and for purchasing new vehicles with lifts. In 1978 the Board established the Paratransit Coordinating Council. The Council's purpose is to increase the cooperation, coordination, availability and effectiveness of special transportation services.

According to ABAG's Projections '90, the elderly population will represent a growing segment of the total population in Santa Clara County. In addition to County fixed route elderly and handicapped service, there are a variety of alternatives available for providing transit services to the elderly and handicapped. According to a recently completed survey, 90 social services agencies provide paratransit services in Santa Clara County to over 95,000 persons each year. There are over 300 vehicles dedicated to paratransit services and they provide over 1.5 million trips annually.

4.7 RAIL SYSTEMS

Rail systems can be viewed as the freeways of the transit network, vitally important to the movement of people and goods over long distances. The Bay Area has four regional rail operators now: BART, CalTrain Peninsula Commute Service, Muni Metro, and Santa Clara Light Rail Transit.

4.7.1 Light Rail

The Guadalupe Corridor Project provides Santa Clara Valley residents with several commute alternatives. The Alma Station in San Jose will provide commuters a direct connection between light rail, bus service, and CalTrain. The Light Rail Transit (LRT) through Downtown San Jose travels in a center median of City streets and along the pedestrian-oriented Transit Mall. The Transit Mall serves as the major transfer point

between Light Rail and bus service. In the future there is also going to be a connection between the Light Rail and Bay Area Rapid Transit (BART) at First and Second Streets. The Cahill Station near the San Jose Arena south of The Alameda may combine a BART station with parking facilities.

Light Rail provides connections from South San Jose through Downtown San Jose to the City of Santa Clara Convention Center at Tasman and Great America Parkway. Currently, there are three Light Rail stations in the City of Santa Clara, one at Old Ironside Drive (west of Great America Parkway), another at Great America Parkway (east of Great America Parkway), and a third stop at Lick Mill Boulevard, which provide access to the high employment and visitor area. A fourth station is planned within the City west of Lafayette Street along Tasman.

The need for additional transit use is most critical in the Fremont/South Bay Corridor, where the greatest road capacity deficiencies are projected. The Fremont/South Bay Corridor is important to Santa Clara because rail extensions would connect the Guadalupe Corridor Light Rail Transit with BART and CalTrain making a workable rail system. In the 237 Corridor, there are plans to further extend the Light Rail line west to Lockheed in Sunnyvale and beyond and east to Milpitas.

Rail systems can not reach their potential without adequate supporting systems. At the residential end, a combination of Park-and-Ride lots and buses, while at the job end, buses, company vans and better pedestrian provisions are warranted to promote the use of the rail systems. Minimum support facilities are currently available along the Santa Clara portion of the system. More facilities may be needed in the future depending on the mix of uses in this portion of the City and individual transit needs. Locating high density uses near transit stations will support transit and allow more people to take advantage of the transit systems.

4.7.2 CalTrain

Another transit possibility currently being studied is improvement of the commuter service on the Southern Pacific Peninsula line. The diesel-powered CalTrain rail line runs along 50 miles of track between San Francisco and San Jose. CalTrain currently has two rail stations in the City of Santa Clara, Lawrence Station and Santa Clara/Airport Station.

There is an opportunity for significant service improvement on the existing CalTrain rail line. An extensive feeder system and higher density development around the stations are needed to increase patronage. Other improvements that would increase patronage on CalTrain could be achieved through better access to stations and more commuter trains. The value of this service to intra-county commuters will be greatly enhanced when the service is extended along the Southern Pacific line to south Santa Clara County.

4.7.3 Bay Area Rapid Transit

As originally planned in 1954, the Bay Area Rapid Transit system (BART) would have circled San Francisco Bay and reached north across the Golden Gate, joining together nine counties. The plan was adopted in 1962 by only three counties, however, San Francisco, Contra Costa and Alameda.

There has been renewed interest to at least circle the South Bay, eventually extending

BART to San Jose, and up through Santa Clara. This would create a unified South Bay and Peninsula regional transit system, with the possibility of a BART station facility at the Santa Clara/Airport Station. BART, however, depends on a high density narrow corridor of origins and destinations for its patronage, and thus needs an extensive feeder system and higher density development around its stations.

4.7.4 Intercity Rail

A State funded report, Intercity Rail Corridor Upgrade Study, identified an existing 167-mile rail line between the City of Auburn and San Jose as suitable for passenger service. Also referred to as the Capital Corridor. This line would use the Southern Pacific track which parallels Lafayette Street in Santa Clara. Santa Clara has a potential for two stops, one at Lafayette Street and Tasman Drive and the other at the existing Santa Clara/Airport Station. The rail routes and stations are shown on the Land Use and Circulation Diagram.

4.7.5 Multi-Modal Stations

The Santa Clara/Airport CalTrain Station is planned as a multi-modal transfer station. County Transit operates bus service to this station and plans to build a bus transfer terminal across the street. The City owns an adjacent parking lot for park and ride service. Any passenger service on the Southern Pacific rail line to Oakland will pass through this station. An extension of BART through downtown San Jose with a station at the Newhall yard would create another connection.

4.7.6 Rail Freight

The rail freight system within the City of Santa Clara consists of the Southern Pacific main lines to San Francisco and Oakland from San Jose. The system includes a major freight marshalling yard for the Peninsula area and piggy-back loading area. These facilities are located on the border with San Jose and provide important freight service for Santa Clara's industrial area, which has many plants with rail access.

4.8 AIRPORT

The San Jose International Airport is owned and operated by the City of San Jose. The Airport is located on the eastern boundary of Santa Clara and provides an extensive schedule of flights. The Airport's location is convenient to the major employment and economic centers of Silicon Valley. It serves as an attraction for private development and investment.

At the same time, the Airport's central location surrounded by urban development creates impacts which extend beyond its boundaries. Noise generated by aircraft take-offs, landings, and overflights continues to be an issue of great concern to nearby residents and is discussed in detail in the Environmental Quality Element.

Although alternative airport sites have been considered, the problems of relocating the airport, such as cost, displacement of current activities, and environmental impacts, have effectively eliminated this possibility. Major terminal and parking expansions are underway to substantially increase passenger and gate capacity.

4.9 TRUCKS

The movement of goods by truck is an essential aspect of the circulation system. Santa Clara's extensive industrial complex as well as its commercial and residential areas rely on trucks. The grid system of thoroughfares and expressways encourages truck traffic to stay on these major streets and off local streets except for deliveries. Truck traffic has not created any special problems for the road network except for those areas where trucks load while partially or completely parked in the public right-of-way and this is an operational, not a General Plan problem.

4.10 TAXIS

Although the number of taxis in the City is relatively small, the service they provide is important. Taxis are the only form of transportation available 24 hours a day, seven days a week for residents unable to drive. Whenever there is only a small number of residents needing a specific transit service, taxis may be the most cost-effective means of delivery. The City will encourage the coordination of the locations and improvements of taxi stands and duck-outs, as necessary.

4.11 SIDEWALKS

In the past, most industrial properties in the City of Santa Clara were designed for the automobile with little concern for pedestrians. Sidewalks were generally not constructed. The typical low-density, sprawling buildings surrounded by surface parking make it uninviting to walk from transit stops or among buildings.

Typically, the City now requires developers to construct sidewalks in all residential and commercial areas to facilitate safe pedestrian movement. In 1989 the City maintained 399 miles of the City sidewalks.

With increased commercial development occurring within the industrial areas and the increased emphasis on Transportation Demand issues, in 1991, the City adopted an industrial sidewalk policy and five year funding program to construct sidewalks on priority industrial streets including those with transit service. Sidewalks allow for more convenient and safer access to public transportation and promote greater pedestrian use of nearby service businesses. Sidewalks also provide safer facilities for recreation and walking and running.

4.12 BIKEWAYS AND TRAILS

Bikeways is a term that encompasses bicycle lanes, bicycle paths, and bicycle routes.

Bicycle Path (Class I facility) is a paved route not on a street or roadway and expressly reserved for bicycles. Bicycle paths may parallel roads but typically are separated from them by landscaping.

Bicycle Lane (Class II facility) is on a corridor expressly reserved for bicycles, existing on a street or roadway in addition to any lanes for use by motorized vehicles.

Bicycle Route (Class III facility) is a facility shared with motorists and identified only by signs, a bicycle route has no pavement markings or lane stripes.

Figure 4-F:

BIKEWAYS

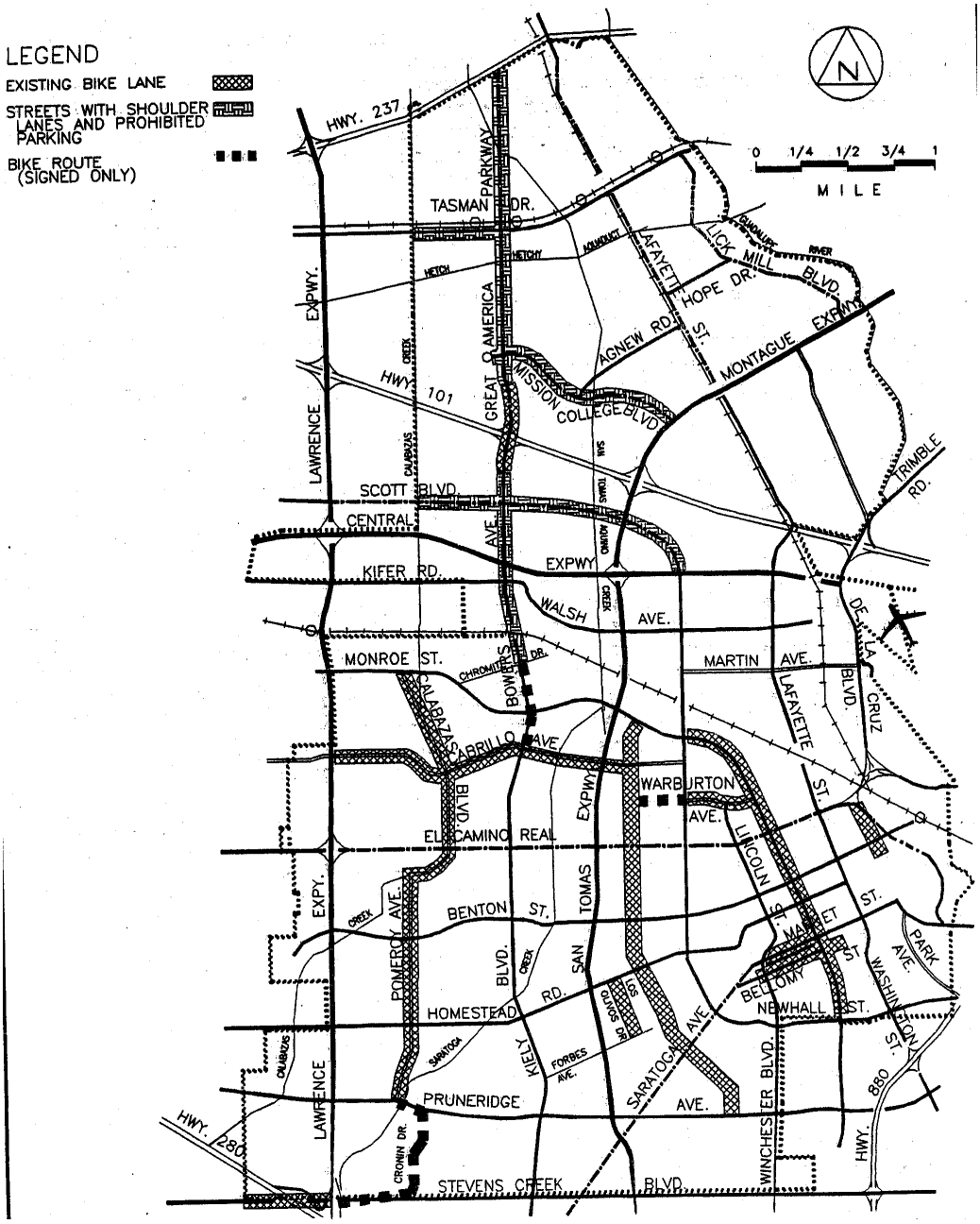
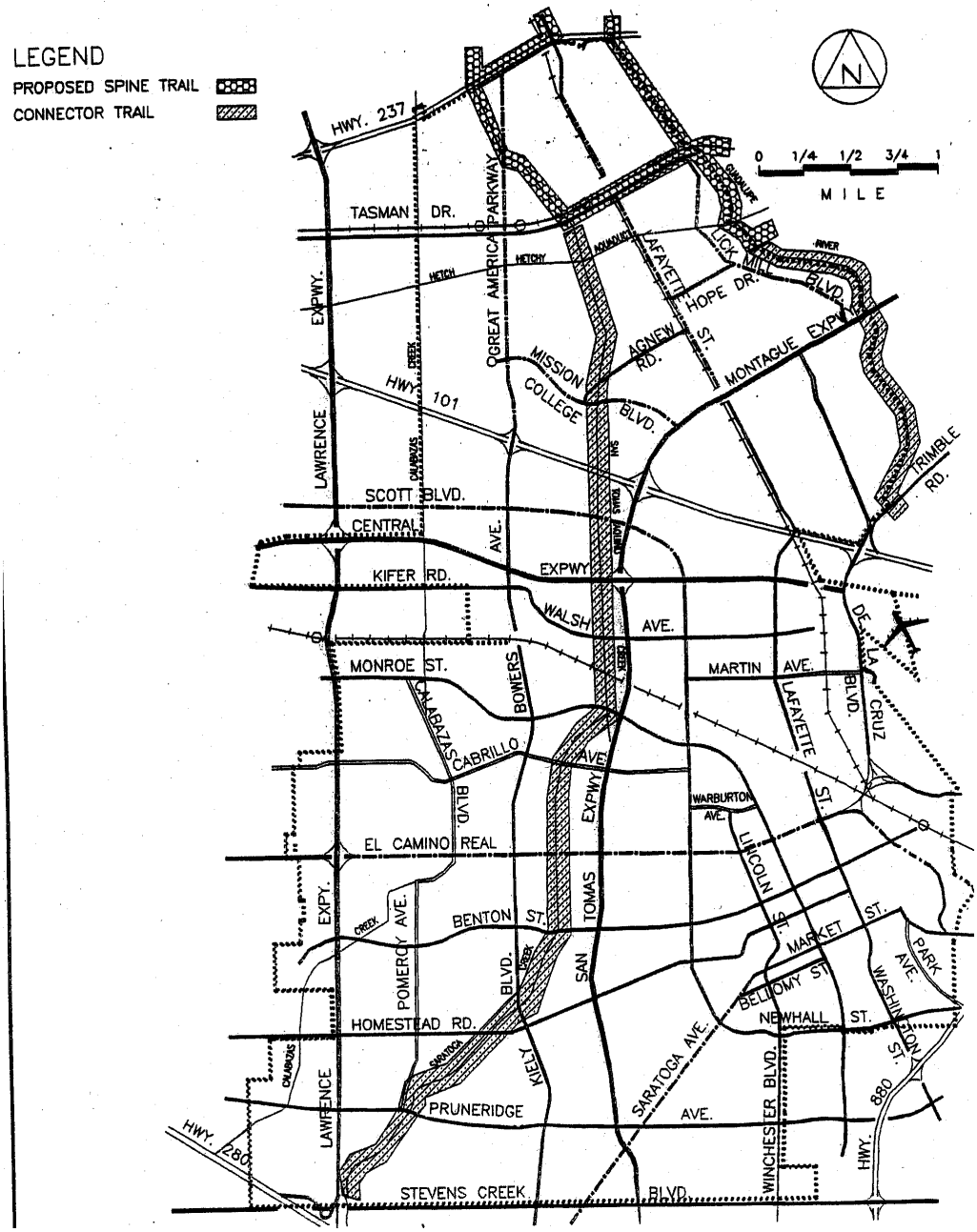


Figure 4-G:

BAY TRAILS



Santa Clara is well suited for bicycle riding because it is level and has a mild climate. Santa Clara currently has nine streets marked with bike lanes. In the newer industrial and Bayshore North areas, on-street parking has been prohibited, which provides space adjacent to the curbs for bicycles. All streets within the City can be used by bicyclists, except for limited access freeways.

Bicycling can provide an attractive alternative to driving alone, especially for short distances. It can also be an efficient and inexpensive means of providing circulation within major employment and activity centers, and distribution from major transportation lines. To promote the use of bicycles, adequate and secure bike racks should be provided at major public facilities, and major employers are encouraged to do the same.

Bicycling will undoubtedly increase although it is not anticipated to result in a significant reduction in the use of automobiles. One reason for this is that there are safety problems involved in the joint use of streets by cars and bikes. To reduce hazards, alternatives for bikeways range from sign identification of a street as a bike route to marking the street surface as a bike lane, to providing a bike path separate from a street.

New overpasses and interchange constructions or reconstructions in the City can be designed to better accommodate bicyclists. Also, flood control work approved by voters in November, 1986, created an unusual opportunity to construct bicycle paths along the County's rivers and creeks, which have their own naturally grade-separated rights of way. These paths have the potential to provide not only recreational routes but commuter access across barriers such as freeways, expressways, and railroad tracks.

The Bay Trail Plan proposes development of a regional network of hiking and bicycling trails around the perimeter of San Francisco Bay. The Bay Trail will provide connections to existing recreation facilities and create links to transportation facilities in such a way as to avoid adverse effects on environmentally sensitive areas.

4.13 GOALS

The Goal of the Transportation Element is to:

> **Strive to provide a safe and convenient integrated transportation system which moves people and goods from place to place efficiently and in a cost effective manner.**

4.14 IMPLEMENTATION, POLICIES AND PROGRAMS

4.14.1 IMPLEMENTATION

For those programs which require initiating action following the adoption of this General Plan, the anticipated time period for implementation has been provided, followed by the lead department or other City Group responsible for implementation. Ongoing programs have been so identified, along with the responsible lead department or City group. Implementation will be monitored annually by the Planning Commission for compliance with Federal and State Law requirements.

DEFINITION OF CITY IMPLEMENTATION GROUPS

Arch. Comm.	-	Architectural Committee
Bldg. Div.	-	Building Inspection Division, Planning & Inspection Department
City Council	-	City Council
City Mgr.	-	City Manager's Office
Community Srvcs.	-	Community Services Department
Fire Dept.	-	Fire Department
Parks/Rec. Dept.	-	Parks and Recreation Department
Planning Div.	-	Planning Division, Planning & Inspection Department
Planning Comm.	-	Planning Commission
Police Dept.	-	Police Department
Public Wks. Dept.	-	Public Works Department
Redev. Agency	-	Redevelopment Agency
Street Dept.	-	Street Department
Water/Sewer Dept.	-	Water and Sewer Utility Department

4.14.2 POLICIES AND PROGRAMS

Roadways
Policies

1. Maximize the existing investment in roads. Make improvements to local thoroughfares within the existing right-of-way or adopted plan lines as warranted by demand and where cost effective.

2. Support efficient and effective use of revenue sources to adequately meet transportation needs.

Programs

(i) Minimize spillover traffic from overloaded regional highways onto local streets. (Ongoing, Public Wks. Dept.)

(ii) Concentrate through traffic on major streets. (Ongoing, Public Wks. Dept.)

(iii) Interconnect traffic signals to synchronize timing and monitor traffic conditions. (Ongoing, Public Wks. Dept.)

(iv) Continue to require property owners to provide rights of way, streets, and sidewalks that meet City standards for width and construction. (Ongoing, Public Wks. Dept.)

(v) Inform state and federal officials of the City's position that broad base taxes, such as gasoline and sales, should be used for regional improvements and local entitlements for construction and maintenance. (Ongoing, State agencies)

(vi) Office and industrial development shall contribute to the cost of transportation improvements through the Traffic Mitigation Program.

(Ongoing, Public Wks.)

(vii) Annually adopt a 10-year Capital Improvement Program for transportation improvements. (Ongoing, City Mgr., City Council)

Highways
Policies

3. Encourage highway improvements only where missing links, inadequate widths and at grade intersections impede traffic flow.

Programs

(viii) Support the completion of the Measure A projects (Highways 101, 237, and 85). (Ongoing, outside transportation agencies)

(ix) Support construction of HOV lanes and grade separations on the County expressways. (Ongoing, outside transportation agencies)

Transportation Demand Management
Policies

4. Minimize the number of automobiles used in commuting.

5. Promote increase vehicle occupancy during commute hours. Promote measures to decrease the percentage of local employees commuting alone in their automobiles.

Programs

(x) A Transportation Demand Management (TDM) program was adopted by the City in September 1989 and is incorporated into this Plan by reference. (Ongoing, City Council)

(xi) Implement a TDM program for major employers with a long term goal for 35 percent of all employees to commute other than by driving alone. (To be implemented in 1992, City Mgr., Public Wks. Dept., Planning Div., Planning Comm., City Council)

(xii) Encourage new development to incorporate TDM measures through site design guidelines, including preferential carpool and vanpool parking, flex time, transit ticket sales, enhanced pedestrian access, bicycle storage and on-site eating and recreation facilities. (Ongoing, Planning Div.)

(xiii) Cooperate with the State, County and adjacent cities to add High Occupancy Vehicle (HOV) lanes to freeways and expressways. (Ongoing, Public Wks. Dept.)

(xiv) Evaluate the Zoning Ordinance parking standards periodically to require only the minimum necessary parking. (Ongoing, Planning Comm.)

(xv) Annually provide commute alternatives information in City's utility bill inserts or other City media releases. (Ongoing, Public Wks. Dept.)

Bus and Rail Systems
Policies

6. Support a transit system that provides enhanced commuter service.

7. Support a coordinated transit system that circles the South Bay and the Peninsula.

8. Support the County's effort to provide transit service to dependent populations such as the disabled, elderly, children, and those who cannot drive.

Programs

(xvi) Support upgrading of service on the CalTrain line, the Light Rail line, and the Capital Corridor line. (Ongoing, outside transportation agencies)

(xvii) Encourage the County Light Rail system to expand to North County. (Ongoing, outside transportation agencies)

(xviii) Support Light Rail and Capital Corridor connections to the East Bay BART Line. (Ongoing, outside transportation agencies)

(xix) Encourage as a long range objective, rail extension between the East Bay and San Jose, Santa Clara and beyond. (Ongoing, outside transportation agencies)

(xx) Encourage the County Transit District to make peak hour service for high employment areas a priority. (Ongoing, outside transportation agencies)

(xxi) Encourage feeder services to carry commuters to transit stations. Within the Bayshore North area, a privately operated shuttle service should connect major attractions, hotels, and commercial services to rail service. (To be implemented in 1992, City Mgr., Public Wks. Dept., Planning Div., Planning Comm., City Council.)

(xxii) Encourage higher densities and supportive uses around major transit stations. (Ongoing, City Council)

Sidewalks, Bikeways and Trails
Policies

9. Encourage the use of bicycles and walking as alternatives to driving.

10. New overpasses and interchanges should be designed to accommodate bicycles and pedestrians.

Programs

(xxiii) Require the construction of sidewalks in developments, redevelopments and major expansions. (Ongoing, Public Wks. Dept., Planning Div.)

(xxiv) Encourage convenient pedestrian links between buildings and parcels occupied by the same company. (Ongoing, Planning Div.)

(xxv) Encourage major employers to provide bicycle racks at employee entrances. (Ongoing, Planning Div.)

(xxiv) Provide adequate bike racks at major public facilities. (Ongoing, Public Wks. Dept., Planning Div.)

(xxvii) Continue to identify streets with adequate width for a safe network of bicycle lanes. (Ongoing, Public Wks. Dept.)

(xxviii) Support construction of the Bay Trail system within Santa Clara including connector trails such as along Saratoga/ San Tomas Aquino Creek and the Guadalupe River. (Ongoing, Planning Div.)

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